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ABSTRACT

As libraries automate their collections and mount online public access catalogs (OPACs), they face special challenges in educating patrons to use these electronic systems effectively and efficiently. Because users are less familiar with the concept and arrangement of an OPAC than with a card catalog, less successful searches commonly occur. Uninitiated users tend to rely on the comfortable author, title, and subject approaches, and miss portions of available information. Furthermore, users often become frustrated by high recall/low precision retrieval and their inability to negotiate a successful search query. Since the OPAC is not merely an automated card catalog, librarians must establish an instructional program to help users conceptually understand and use the sophisticated searching features the OPAC offers. As libraries add external databases to their local holdings and offer remote access to the OPAC, they become information centers without walls, and it becomes essential that users have a clear understanding of how to retrieve desired information in a timely manner. (26 references) (Author/SD)

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ENHANCING THE LEARNING PROCESS: THE ONLINE CATALOG AS AN INSTRUCTIONAL TOOL

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Abstract: As libraries automate their collections and mount online public access catalogs (OPACs), they face special challenges in educating patrons to use these electronic systems effectively and efficiently. Although users possess computer retrieval skills, most users lack research and bibliographic skills. Since the OPAC is not merely an automated card catalog, librarians must establish an instructional program to help users conceptually understand and use the sophisticated searching features the OPAC offers. As libraries add external databases to their local holdings, and offer remote access to the OPAC, it becomes essential that users have a clear understanding of how to extrapolate desired information in a timely manner.

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ENHANCING THE LEARNING PROCESS:

THE ONLINE CATALOG AS AN INSTRUCTIONAL TOOL

Since the mid 1970s, online public access catalogs (OPACs) have been revolutionizing library information delivery systems. The years 1973-1983 have seen a rapid growth in OPAC implementation with the number of automated systems installed in libraries increased by 100%.(1). Four years ago, even the information contained in the 10 million cards and 9000 drawers of the New York Public Library was computerized (2). It is predicted that by 1990, a majority of the medium-sized and large libraries in North America will be automated (3).

Information that was once buried among thousands of records in intimidating wooden card catalog cabinets is now more readily accessible to library users due to technological advancements in digitizing information. Because many OPACs are also linked to circulation records, bibliographic data and item status information can be easily obtained from terminals within a library building, or remotely from an office, laboratory, or residence often 24 hours a day. OPACs have increased both user awareness and user satisfaction with libraries, and have fostered closer relationships between researchers and the colllections of information they need.

However, it is a mistake to believe that because a patron can use a book, card, or microform catalog (which is often in a single access generic form), the same patron can successfully use an OPAC (which can differ in software design and number of access points from library to library). It is folly to assume that an OPAC user has sufficient knowledge or a repertoire of skills to successfully exploit the sophisticated access points and capabilities of an automated system. Many users are satisfied with information they receive from a terminal, even though this information may represent only a small fraction of what is actually available in the database. (4). Therefore, the notion that satisfaction with a system indicates proficiency with using it, is a false one. (5).

Although users may come to a library today with greater computer literacy skills than in previous generations, these same users often lack commensurate experience and competence in information retrieval and research skills. Moreover, regardless of years of experience with using a card catalog, because the OPAC is different in form, function and design, all OPAC users become new library users. As Linda Smith of the University of Illinois Graduate School of Library and Information Science notes, OPAC users with a computer background must learn to migrate from data processing skills to knowledge engineering skills (6).

Features of the OPAC

We know from studies funded by the Council on Library Resources in 1981 that OPAC instruction must be different from that provided for the card catalog, that patron comfort with the card catalog is lost with the online catalog, and that OPACs often attract new users to libraries (7). Research shows that OPAC usage increases as patrons discover features and execute commands that were not available in the card catalog. These features include:

truncation -- the ability to search by stem words which can yield both singular and plural forms in the same retrieval query

limiting -- the ability to refine search results by publication year, format of material, or language

boolean logic -- the capability to link two or more search concepts together using the relationships of "and" "or" or "not"

keyword searching -- the ability to pull out natural language or current vocabulary words from indexes within a record, or to search

the contents and analytic notes. This is particularly useful when word order is not known

sorting and printing -- being able to sort records by designated fields (such as author) and download them to a printer or disk, rather than having to painfully transcribe the bibliographic elements.

browsing -- the ability to search by subject heading, author, title, or call number to expand a search and to gather cross references.

search history -- automatically recording a series of search queries so that users do not have to start over with each new search request.

status or
copy availability -- the ability to display status information from the item record field, (such as checked out, or not checked out)

These features are complex in design, and do not represent the mere automation of the card catalog. Instead, they offer alternative strategies for accessing information. This change in catalog design requires a corresponding

cognitive shift in retrieval behavior. Users must think ahead about not only what information they need, but how they need that information --as a keyword or phrase in a record, in a browse mode from which they can select the most appropriate name or subject entry, or perhaps as a combination author-title query. Because of the OPAC browse feature, which systematically broadens access through authoritized names, series, and subject headings, users are able to consciously and systematically find information rather than serendipitiously stumbling onto relevant citations as they often casually do by thumbing through groups of cards in a wooden, finite-sized catalog drawer (8). Specialized education and training by a reference librarian can play a critical role in helping users to pre-plan search strategies to successfully extrapolate the desired information efficiently and effectively.

Studies have shown that because users are less familiar with the concept and arrangement of an OPAC than with a card catalog, less successful searches do, in fact, occur. Users tend to rely on the comfortable author, title, or subject approaches, and actually miss a large portion of the available information. When problems occur or undesired results are displayed, users have a tendency to become confused and walk away from a terminal, rather than renegotiate a search query. Users are often frustrated by high recall, low precision retrieval and their inability to renegotiate a successful query which can be recorded on

transaction logs. Typical problems often include:

(1) Misconceptions about OPAC capabilities and contents.
(2) Punctuation and spelling errors.
(3) Underutilization of system features such as keyword or browse searching, format refinement, and truncation.
(4) Error repetition, rather than reliance upon help screens.
(5) Difficulty with searching abbreviations, numerals, initialisms, and hyphenated words.
(6) Difficulty in finding the correct subject term.
(7) Confusion about titles with leading articles
(8) Questions about display interpretation.

Librarians at Northwestern University have taken a national leadership role in recognizing the need to provide specialized OPAC education. They have been early pioneers in establishing a set of systematic and generalizable instructional objectives, and a training program, to educate online catalog users (10). These objectives include the ability of users to

(1) Understand the content and function of the OPAC
(2) Structure a search statement by selecting, entering, and manipulating appropriate commands
(3) Interpret error messages and utilize help screens
(4) Interpret and evaluate the retrieval received

Other academic librarians have approached these same user education challenges in a different way. One year before the online catalog became available for public usage at Arizona State University, a committee of seven librarians designed a model training program, wrote a 100-page user manual, designed point-of-use instructional materials, and developed public relations bookmarks with systems commands (11). Although this approach may seem extreme, it does illustrate the point that librarians cannot assume that users will gain sufficient searching skills by osmosis. Systematic education on how to use the OPAC and how it compares to the card catalog, can increase user proficiency (12).

Although users often enthusiastically embrace the OPAC without any formal instruction, we know that user satisfaction does not equal user proficiency (13). For example, at one library a patron typed in the keyword "marriage" and combined it with "honeymoon" to see if he could find a honeymoon spot for his impending marriage." (14). Although this search demonstrates a plausible use of the OPAC, a more successful approach would have been for the patron to consult a reference librarian for an appropriate directory containing the names, addresses, and telephone numbers of romantic hotels or resorts.

What Does The Future Hold ?

As OPACs develop, they are frequently appearing on campus telecommunications and information networks often integrated with other data resources.

For examples, libraries at Vanderbilt University, the University of Delaware, Carnegie Mellon, Georgia Institute of Technology, and the Colorado Alliance of Research Libraries have turned their OPACs into local information utilities by mounting commercial collections of data (15). In addition to containing book and serial holdings, these libraries have looked beyond their local system and enhanced their OPACS by also making available to users bibliographic sources such as (1) periodicals and commercial periodical indexes at the journal article level, (2) full text sources such as the Academic American Encyclopedia and the American Heritage Dictionary and (3) numeric databases such as machine readable data file from the Interuniversity Consortium for Political and Social Research and (4) graphic images such as the transmission project between the National Agricultural Library, North Carolina State University, and the University of Maryland. This decentralized or distributed access to library-based information resources reaches all departments on the campus network through terminals and personal computers, as well as remote users who care to dial-in to the library's mainframe computer.

Lehigh University extends this concept to encompass

electronic mail for document delivery, and bulletin boards for downloading pre-packaged bibliographies (16). Penn State and Northwestern University provide a locally developed database management system that interfaces with the OPAC so users can manipulate and repackage local data for personal analysis and use (17). Both Cornell and the University of Texas at Austin push the limits even further by incorporating a Macintosh hypercard front-end tutorial to their IBM-based OPAC. The University of Southern California has also developed a hypercard package, but this time its use is as an interactive linkage between course assignments, encyclopedia information, database citations, and the library's online catalog. This cooperative venture, known as Project Jefferson, is a collaborative effort between the University Library, the Freshman Writing Program, and the School of Industrial and Systems Engineering. (18)

The possibilities are endless as libraries vigorously employ communications and computer technology in support of the educational missions of their institutions. This extension of the traditional building-based library embraces the innovative borderless university or electronic "information center without walls" concept. No matter what the hardware or network configuration, OPACs can serve as partners in the teaching, learning, and research processes with the potential of developing into more than mere passive information surrogates. They can actively stimulate and enhance critical thinking by challenging users to clearly

define a search strategy; execute a successful query; reformulate a search argument if the retrieval if it is too broad or too narrow; interprete the results by identifying the correct format and location of the information; and evaluate the results (by finding the material and reading it to determine its appropriateness). The mixture of bibliographic and image formats in records for microforms, media, books, serials, etc-- accessible through a myriad of access points can enhance analytical and evaluative thinking, particularly for students as they apply these thinking skills to class assignments. Additionally, access to external information banks within larger organizational computing systems, such as ARPANET, NSFNET, or CSUNET over X.25 connectivity networks can also reinforce critical thinking skills by challenging users to engage in an expanded, exploratory process rather than merely solving an information need at the local level.(19).

In the words of Warren B. Martin, Senior Fellow at the Carnegie Foundation for the Advancement of Teaching, OPACS can bring technology into the service of <u>teaching</u>, to help students gain control over large quantities of information to build knowledge bases, and, ultimately, to develop wisdom. (20) These sentients echo John Scully's remarks at the 1989 CAUSE conference in which he noted that universities of the 21st century have a responsibility to help students transform information into knowledge. We cannot assume that users have the required skills to do so. Thefefore, the key to

successfully enhancing the OPAC learning process becomes carefully planned systematic instruction and educational guidance so that users will understand the scope and design of the OPAC in an effort to more successfully retrieve information as intended by their designers. The order is a tall one, but an attainable one.

FOOTNOTES

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